Catapult

Explore forces and motion with this fun simple machine.

Kit contains:

- 3 Rubber Bands
- 6 Craft sticks
- 1 Plastic spoon
- 2 Pom-poms

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INSTRUCTIONS

Step 1. Take 5 craft sticks and stack them up. Wrap a rubber band around each end so they stay together. Set that bundle aside.

Step 2. Line up the bottom of the plastic spoon with an end of the last craft stick. Wrap the remaining rubber band around them as shown.

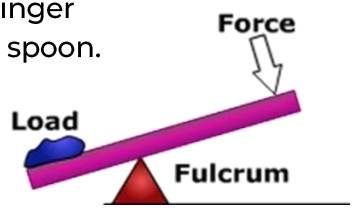
Step 3. Put your craft stick bundle between the spoon and the craft stick base. Closest to the part where they're connected is best.

To use your catapult: Put a pom-pom in the spoon. Push the spoon down with your finger, hold the other end to keep it from moving, and then let go. Watch your pom-pom fly!

WHY DOES IT WORK?

Your catapult is a type of **lever**, which is one of the six **simple machines**. A lever works by using four parts:

1. The **arm**. That's the part that moves. In your catapult, it's the spoon.
2. The **fulcrum**. That's the part that stays still that the arm moves around or over. In your catapult, it's the bunch of 5 craft sticks.
3. The **load**. That's the thing you're moving. In your catapult, it's the pom-pom.
4. The **force**. That's the thing that makes the arm of the lever move. In your catapult, it's your finger pushing down the spoon.



Another science concept you're seeing in your catapult is **transfer of energy**. When you push the spoon down in your catapult, you're using the energy in your finger to create **potential energy** in the spoon. When you let go, the potential energy changes to **energy of motion** and the spoon moves. Then the energy of motion transfers from the spoon to the pom-pom and the pom-pom goes flying. The energy moved from your finger to the spoon to the pom-pom!

IDEAS TO TRY!

- Try to fling different items out of your catapult. Does the catapult work differently if you use something heavier or bigger? Why do you think that is?
- Try to fling with just a little push. Then try a big push (be careful not to break the spoon). What's different? Why?

- Make a target (this could be a cup or bowl) and see if you can get your pom-pom into the target using the catapult. Move the target closer or farther. You could make this a game – for instance, each time you get the pom-pom in the target, you score a point; first one to 10 points wins!

LEARN MORE ABOUT IT!

- *How Machines Work: Zoo Break!* by David Macauley
- *The Kids' Book of Simple Machines: Cool Projects & Activities That Make Science Fun* by Kelly Doudna
- *Experiments in Forces and Motion with Toys and Everyday Stuff* by Emily Sohn
- "SciShow Kids – Levers": https://youtu.be/lueqE0lxLyc